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United States Department of the Interior

NATIONAL PARK SERVICE

Air Resources Division

P.O. Box 25287

Denver, CO 80225

SEP 27 1999

OFFICE OF AIR

September 20, 1999

N3615 (2350)

Ms. Anita Frankel, Director
Office of Air Quality, OAQ-107
U.S. Environmental Protection Agency
1200 6th Avenue
Seattle, Washington 99101

Dear Ms. Frankel:

The National Park Service (NPS) wishes to express its concern regarding the proposed Alaska construction Permit No. 9332-AC005 for the Cominco Red Dog Mine Production Rate Increase Project, Air Quality Control Application No. X65. This permit application is for increasing emissions of nitrogen oxides (NO_x) by 1100 tons per year (TPY), particulate matter (PM₁₀) by 35 TPY, Volatile Organic Compounds by 58 TPY, lead by 0.58 TPY, and carbon monoxide by 90 TPY. Sulfur dioxide (SO₂) is proposed to decrease by 37 TPY. The Cominco Alaska Inc. Red Dog Mine is located about 5 miles west of the Noatak National Preserve (NP) and 32 miles northeast of the Cape Krusenstern National Monument (NM). In addition, the Mine-Port haul road traverses about 20 miles of the Cape Krusenstern NM. Both are PSD Class II areas administered by the NPS. We offer the following comments regarding inadequacies of the proposed permit.

PSD APPLICABILITY

Cominco is requesting that the 5 megawatt (MW) Wartsila generators (MG-1, 3, and 4) be placed under the operational cap that used to include MG-5, MG-5 would now be subject to PSD, and a seventh similar generator (MG-17) would be added. Only MG-5 and MG-17 were subjected to the Best Available Control Technology (BACT) requirements of PSD. Cominco contends that MG-5 operated as a standby unit and that MG-1, 3, and 4 would not increase operation under the restructured operational cap. Cominco should provide records documenting the operation of MG-1, 3, and 4 so that their past actual operation and emissions can be determined for comparison to the future potential emissions that could occur under the restructured cap. Cominco must show that a cap that formerly covered four generators would not allow additional operation of the three generators that remain under the original cap.

COM 49-001

While EPA policy would normally not require an emissions unit to be subjected to BACT due to an increase in utilization resulting from modifications elsewhere at the facility, it does require that all emission increases associated with the modifications be counted toward PSD applicability and included in the air quality analyses. In this case, however, full PSD review (including BACT) could apply to MG-1, 3, and 4 if it is determined that these generators will experience an increase in potential emissions as the result of a restructuring (and potential relaxation) of the operational cap specific to them.

BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

Diesel Generators: In its preliminary Technical Analysis Report, Alaska Department of Environmental Conservation (ADEC) correctly concluded that Selective Catalytic Reduction (SCR) is technically and economically feasible for the 5 MW Wartsila generators (see Table 4.1-1). However, ADEC then also proposed that Cominco could use an illegal "netting" scheme to avoid installation of SCR. After ADEC was advised that its netting approach could not be allowed, it now contends that SCR is not economically feasible. Although ADEC discusses a new economic analysis and a new review of the RACT/BACT/LAER Clearinghouse (RBLC) for controls on similar generators, it does not present its methods in a way that can be evaluated.

Cominco has selected MG-5 as the generator to be removed from the original cap and subjected to PSD review. Because MG-5 is the only generator to include a heat recovery system, it is also the most expensive to retrofit with SCR. Unless Cominco can show why generator MG-5 is most suitable for separation from the cap, it would appear that Cominco is attempting to skew the PSD process by intentionally selecting the generator that would be least likely to be controlled.

Our review of the RBLC indicated that most modern large internal combustion engines are capable of meeting much lower NO_x limits than the 11 g/kWh originally proposed, as shown by a table submitted with our original comments. Unfortunately, ADEC now proposes to eliminate the specific emission limit altogether and allow the generators to emit at any specific rate provided they do not exceed a mass per hour limit. Because BACT requires that the best feasible control technology be employed and operated properly at all times and under all load conditions, the mass per hour limit does not represent BACT because it allows for decreasing control effectiveness as operating loads decrease.

ADEC has stated that it could find only one application of SCR to a diesel used for primary power generation, and appears to conclude from that that SCR is not economically feasible. Our review of the RBLC (see enclosed table) found ten applications of SCR to gas-fired industrial engines and two applications to large diesel engines. (Even though the exhaust streams from engines fired with natural gas and diesel fuel are different, EPA policy requires that a technology suitable for one be considered feasible for the other unless it can be shown that the differences prohibit this technology transfer.) Furthermore, According to EPA's Alternative Control Techniques (ACT) document (EPA-453/R-93-032) for control of "NO_x Emissions from stationary reciprocating Internal Combustion Engines," July, 1993, several more such installations exist:

"Only two vendors offering base metal catalysts contacted for this study have SCR installations operating with diesel engines. The majority of these installations is in emergency power generation service and has accumulated relatively few operating hours. One base-metal catalyst vendor's diesel-fired SCR experience is presented in Table 5-11 and shows six U.S. installations with a total nine engines.⁵⁷ All of these SCR applications are load-following, but details of the duty cycle and the ammonia injection control scheme were not provided. The reported NO_x emission reductions range from 88 to 95 percent, with corresponding ammonia slip levels of 5 to 30 ppmv. The tests were performed in accordance with State-approved methods for California, with emissions reported on a 15-minute averaging basis. The first of these installations was installed in 1989, and one installation has operated over 12,000 hours to date.

The available data show diesel-fired SCR applications using either zeolite or base-metal catalysts achieve NO_x reduction efficiencies of 90+ percent, with ammonia slip levels of 5 to 30 ppmv. These installations include both constant- and variable-load applications. Experience to date, however, especially in the United States, is limited in terms of both the number of installations and the operating hours. A 90 percent reduction is used in Chapter 6 to calculate controlled NO_x emission levels and cost effectiveness."

Since over five years have passed since the ACT document was presented, it is suggested that the applicant follow-up on the EPA survey to get a more current report on the operating history of these units.

In addition to simply reviewing the RBLC, the EPA New Source Review Workshop Manual directs applicants and agencies to go beyond the RBLC:

IV.A.1. DEMONSTRATED AND TRANSFERABLE TECHNOLOGIES

Applicants are expected to identify all demonstrated and potentially applicable control technology alternatives. Information sources to consider include:

- EPA's BACT/LAER Clearinghouse and Control Technology Center;
- Best Available Control Technology Guideline - South Coast Air Quality Management District;
- control technology vendors;
- Federal/State/Local new source review permits and associated inspection/performance test reports;
- environmental consultants;
- technical journals, reports and newsletters (e.g., JAPCA and the McIvaine reports), air pollution control seminars; and
- EPA's New Source Review (NSR) bulletin board.

The applicant should make a good faith effort to compile appropriate information from available information sources, including any sources specified as necessary by the permit agency. The permit agency should review the background search and resulting list of control alternatives presented by the applicant to check that it is complete and comprehensive.

To assist ADEC in this effort, we are enclosing a list of approximately 200 applications of SCR to oil and gas fired engines around the world, many very similar to those operated and proposed by Cominco.

Finally, although ADEC formerly accepted SCR as economically feasible at a cost as high as \$5,643 per ton of NO_x removed, it has now concluded that a cost as low as \$2,100 is excessive. (ADEC did not provide its method of arriving at this figure for Cominco. Actual costs may be lower.) Our experience in reviewing permit applications across the U.S. is that states are typically setting a cost effectiveness range of \$2,000-5,000 per ton of NO_x, with \$4,000 per ton the most frequently used threshold.

Air Quality Issues

We believe that the air quality analysis is incorrect by assuming an unrealistic 85% fugitive dust control efficiency for the haul road that runs through the Cape Krusenstern NM. The dispersion modeling for the haul road indicates that the PSD Class II PM₁₀ 24-hour increment would be exceeded, but not violated. A more realistic control efficiency for the fugitive dust control would undoubtedly lead to violations of the PSD Class II PM₁₀ 24-hour increment. In fact, the Class II PM₁₀ increment in the National Monument will be violated if the control efficiency were assumed to be 82%.

It has also come to our attention that Cominco may have circumvented rules to protect ambient air by acquiring additional lands to avoid exceedances of the PSD Class II NO₂ increment. The Noatak NP is used by the public for recreation and hunting purposes. We are additionally concerned that the public exiting our National Preserve may be exposed to high levels of pollutants from the Cominco facility due to the fact that public access to the facility is not precluded by physical barriers such as fences or other physical means. We ask that EPA further investigate this issue and assure that lands were not acquired for pollution dispersion purposes and that access to the facility be physically precluded to the public as in accordance with ambient air rules.

CONCLUSIONS & RECOMMENDATIONS

Our overall conclusions and recommendations are essentially the same as before. Due to the extremely brief time allowed to NPS for review of the latest submittal by ADEC, we have been able to discuss only the most glaring errors. We continue to believe that the revised proposal could amount to a relaxation of limits on operation on this PSD major source, thus qualifying the Red Dog mine for another round of PSD review for those emission units that would experience an increase in emissions due to the increased operation. Due to this issue and the issue of previous modifications that have escaped review, the number of emission units that would be subject to PSD review goes well beyond those reviewed by ADEC. NPS again recommends that the entire Red Dog facility as most recently proposed be subject to PSD review to capture the complete impact of this project and to ensure that no emission unit has circumvented full PSD review through unpermitted installation or incremental increases in operation.

The BACT analyses are deficient in that they fail to reach conclusions that are supported by PSD regulations or procedures, or available information, or have not been conducted for significant sources and/or pollutants.

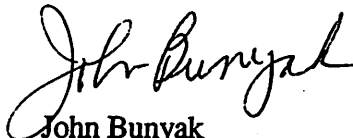
The air quality analysis is incorrect because it assumes an unrealistically high effectiveness of road dust suppression. It is very likely that a more realistic analysis would result in a prediction of exceedances of the Class II PSD increment for PM_{10} .

The proposal does not adequately protect the general public, including those persons visiting federal lands under the management of NPS, from excessive levels of air pollutants.

ADEC should declare the application incomplete and require that Cominco correct the deficiencies noted.

If you have any questions regarding this issuer, please contact John Notar of my staff (303) 969-2079.

Sincerely,

A handwritten signature in cursive script, appearing to read "John Bunyak".

John Bunyak
Chief, Policy, Planning and Permit Review Branch

Enclosure

Table 4. Gas-Fired reciprocating Engines from RBLC 5/31/99

Small Natural Gas-Fired Engines			Rating (HP)	Issue/ Start-Up Date	Emission Rate				Control
Project Name	Permit #	Project Description			(g/BHP-Hr)		(g/kWh)		
					NOx	VOC	NOx	VOC	
Richmond Exploration	CA-0450	1 NG IC engines	200	10/24/1991					NSCR
De La Guerra Power	CA-0416	1 NG generators	380	11/12/1991					NSCR
Snyder Oil	WY-0020	1 NG compressors	520	06/29/1994	2.00	0.50	2.7	0.7	NSCR
Snyder Oil	WY-0020	1 NG generators	385	06/29/1994	2.00	0.50	2.7	0.7	NSCR
Snyder Oil	WY-0020	1 NG generators	577	06/29/1994	2.00	0.50	2.7	0.7	NSCR
Western Envir Engr	CA-0642	2 engines	175	05/02/1995					catalyst
GR's Onions	CA-0645	6 rich-burn NG IC engines	130	05/18/1995					catalyst
So Cal Gas	CA-0655	1 NG IC engines	132	06/30/1995					catalyst
Bakersfield Cellular	CA-0662	1 NG generators	72	07/20/1995					catalyst
City of Clovis	CA-0791	1 NG IC engines	300	11/06/1996	0.33	0.07	0.4	0.1	catalyst
Toys R Us	CA-0792	1 NG IC engine		11/27/1996	14.60				
Vintage Petroleum	CA-0788	13 engines	150	02/04/1997					catalyst
Vastar Res	CO-0033	1 NG compressors	421	07/31/1997	1.00	0.01			NSCR
Vastar Res	CO-0035	1 NG compressors	421	07/31/1997	1.00	0.01			NSCR
Mobil	CA-0754	1 NG IC engines	280	09/29/1997	1.50		2.0	0.0	clean burn
Phila SW Water Treat	PA-0096	2 NG IC engines	595		2.00				lean burn
Phila SW Water Treat	PA-0097	3 NG IC engines	595		2.00				lean burn

average
median

2.84
2.00

Large Natural Gas-Fired Engines			Rating (HP)	Issue/ Start-Up Date	Emission Rate				Control
Project Name	Permit #	Project Description			(g/BHP-Hr)		(g/kWh)		
					NOx	VOC	NOx	VOC	
Northern Nat Gas	IA-0023	1 NG compressors	4000	09/05/1990	1.80		2.4	0.0	combustion
Northern Nat Gas	IA-0023	2 NG compressors	2000	09/05/1990	1.80		2.4	0.0	combustion
FL Gas&Transmission	FL-0046	1 NG compressors	4000	05/09/1991	2.00		2.7	0.0	combustion
FL Gas&Transmission	FL-0051	1 NG compressors	2400	05/10/1991	2.00		2.7	0.0	combustion
FL Gas&Transmission	MS-0021	1 NG IC engines	2400	05/14/1991	2.00	1.33	2.7	1.8	combustion
Swift Energy	OK-0026	7 NG IC engines	1132	09/05/1991					catalyst
CGN Transmission	PA-0065	1 NG compressors	4200	09/24/1991	2.00	0.90	2.7	1.2	clean burn
Pacific Energy	CA-0525		2650	02/25/1992	0.80		1.1	0.0	lean burn
CGN Transmission	OH-0211	2 NG compressors	4200	03/11/1992	2.00	0.90	2.7	1.2	combustion
CGN Transmission	OH-0211	1 NG compressors	4200	03/11/1992	2.80	0.80	3.5	1.1	combustion
CGN Transmission	PA-0067	4 NG compressors	3200	03/13/1992	2.00	0.80	2.7	1.1	lean burn
CGN Transmission	OH-0212	2 NG compressors	4200	04/08/1992	2.00	0.98	2.7	1.3	combustion
CGN Transmission	OH-0213	1 NG compressors	4200	05/28/1992	2.00	0.90	2.7	1.2	combustion
CGN Transmission	OH-0213	1 NG compressors	3200	05/28/1992	2.00	0.80	2.7	1.1	combustion
Temple U	PA-0065	1 1.6 MW NG generator		10/02/1992	2.00				lean burn
Snyder Oil	CO-0022	8 NG IC engines	2500	11/13/1992	2.00				lean burn
Texaco	LA-0082	3 NG compressors	1842	02/01/1993			0.0	0.0	
Marshall Municipal Util	MO-0009	1 NG IC engines	8500	04/06/1993	2.00	0.7			clean burn
Marshall Municipal Util	MO-0019	6.3 MW NG generator		04/06/1993	2.00	0.7			clean burn
CGN Transmission	WV-0011	1 NG compressors	6080	05/03/1993	2.00	0.82	2.7	1.1	lean burn
North Star Recycle	OH-0220	3 NG IC engines	1700	06/09/1993	1.95	0.4	2.6	0.5	catalyst
FL Gas&Transmission	FL-0075	1 NG compressors	4000	09/27/1993	2.00		2.7	0.0	lean burn
Williams Field Ser.	NM-0021	1 NG compressors	1000	10/29/1993	1.40	1	1.9	1.3	clean burn
Intel	AZ-0022	5 NG generators	2200	04/10/1994					acid inject.
Indiana U of PA	PA-0122		8386	12/29/1994	1.90		2.5	0.0	clean burn
Transcontinental	PA-0118	8 NG compressors	2050	06/05/1995	4.00		5.4	0.0	LEC
Transcontinental	PA-0118	1 NG compressors	5500	06/05/1995	4.00				LEC
Transcontinental	PA-0118	2 NG compressors	3400	06/05/1995	4.00				REC
Transcontinental	PA-0118	4 NG compressors	2100	06/05/1995	7.00				LEC
Meridian Oil	NM-0025	8 NG compressors	2650	06/01/1995	1.50	6.60	2.0	8.9	clean burn
Meridian Oil	NM-0026	4 NG compressors		10/27/1995	0.70	0.8	0.9	1.1	clean burn
CGN Transmission	PA-0146	1 NG IC engines	1000	02/29/1996	7.00	1.10	9.4	1.5	LE7
CGN Transmission	PA-0146	1 NG IC engines	2000	02/29/1996	4.00	1.65	5.4	2.2	
CGN Transmission	PA-0146	1 NG IC engines	3400	02/29/1996	4.00	0.83	5.4	1.1	LE4
City of Tulare	CA-0692			03/13/1996	1.00		1.3	0.0	lean burn
Stockton	CA-0755	1 NG IC engines	2760	11/22/1996	1.25	0.75	1.7	1.0	lean burn
average					2.45				
median					2.00				

average
median

2.45
2.00

Western Gas-Hight	WY-0033	2 NG compressors	1500	03/31/1997	2.00				catalyst
Williams Field Services	NM-0030	14 NG compressors	1478	05/03/1997	1.50	1.00	2.0	1.3	
Vastar Res	CO-0028	1 NG compressors	1215	07/31/1997	1.00	0.01			NSCR
Vastar Res	CO-0028	2 NG compressors		07/31/1997	1.00	0.01			NSCR
Vastar Res	CO-0029	2 NG compressors		07/31/1997	1.00	0.01			NSCR
Vastar Res	CO-0030	1 NG compressors	1215	07/31/1997	1.00	0.01			NSCR
Vastar Res	CO-0030	2 NG compressors		07/31/1997	1.00	0.01			NSCR
Vastar Res	CO-0032	1 NG compressors		07/31/1997	1.00	0.01			NSCR
Vastar Res	CO-0032	1 NG compressors	738	07/31/1997	1.00	0.01			NSCR
Vastar Res	CO-0032	1 NG compressors	1215	07/31/1997	1.00	0.01			NSCR
Vastar Res	CO-0033	1 NG compressors	738	07/31/1997	1.00	0.01			NSCR
Vastar Res	CO-0033	1 NG compressors	1215	07/31/1997	1.00	0.12			NSCR
Vastar Res	CO-0034	2 NG compressors	1478	07/31/1997	1.50	0.01			NSCR
Vastar Res	CO-0034	1 NG compressors	1215	07/31/1997	1.00	0.01			NSCR
Vastar Res	CO-0035	1 NG compressors	1215	07/31/1997	1.00	0.12			NSCR
Vastar Res	CO-0036	3 NG compressors	1215	07/31/1997	1.00	0.12			NSCR
Montgomery	CA-0789		1274	04/23/1998	1.20		1.6	0.0	lean burn
Williams Field Ser.	NM-0040	6 NG compressors	4540	09/23/1998	1.50	1	2.0	1.3	lean burn
Saba Petrol	CA-0852	1 NG IC engines	747	10/12/1998	0.15				catalyst
CGN Transmission	PA-0145	1 NG compressors	3400		4.00	0.83	5.4	1.1	
Cominco-Red Dog	AK	6 diesel compressors	5000				11.0		
Western Envir Engr	CA-0642								

average
median

1.10
1.00

overall
average
median

2.00
1.95

Table 4. Oil-Fired reciprocating Engines from RBLC 5/31/99

Small Oil-Fired Engines				Issue/	Emission Rate				
Project Name	Permit #	Project Description	Rating (HP)	Start-Up Date	(g/BHP-Hr)		(g/kWh)		Control
Archie Crippen	CA-0830	1 IC diesel engine	500	12/09/1997	6.20	0.3			
Cunningham Davis Enviro	CA-0693	1 IC diesel engine	173	04/05/1996	10.40				combustion
Keamey Ventures Ltd	CA-0691	1 IC diesel engine	208	01/12/1996	6.30	0.33			combustion
Parker Hannifin	CA-0717	1 IC diesel engine	450	01/11/1996	9.50				combustion
Robison, Carlton & Carlton	CA-0586	1 IC diesel engine							
Tracey Material Recovery	CA-0756		360	10/29/1996	9.60				combustion
Williams Bolthouse Farms	CA-0753	1 IC diesel engine	402	06/27/1996	7.20				combustion
average					8.20				
median					8.35				

Large Oil-Fired Engines				Issue/	Emission Rate				
Project Name	Permit #	Project Description	(HP)	Date	NOx	VOC	NOx	VOC	Control
Phila NE Water Treatment	PA-0097	7 IC diesel engines	1635	10/15/1992	2.00	0.32			SCR
Phila SW Water Treatment	PA-0096	11 IC diesel engines	1156	10/15/1992	2.00	0.32			SCR
Resource Renewal Technologies	CA-0562	1 IC diesel engine	951	06/18/1993	6.60	0.33			combustion
average					2.00				
median					2.00				
overall									
average					3.53				
median					2.00				

Table 4. Gas-Fired reciprocating Engines from RBLC 5/31/99

Small Natural Gas/Oil-Fired Engines				Issue/	Emission Rate				
			Rating	Start-Up	(g/BHP-Hr)		(g/kWh)		
Project Name	Permit #	Project Description	(HP)	Date	NOx	VOC	NOx	VOC	Control

average #DIV/0!
median #NUM!

Large Natural Gas/Oil-Fired Engines				Issue/	Emission Rate				
			Rating	Start-Up	(g/BHP-Hr)		(g/kWh)		
Project Name	Permit #	Project Description	(HP)	Date	NOx	VOC	NOx	VOC	Control
Indiana U of PA	PA-0122	4 gas/oil IC engines (gas)	8386	12/29/1994	0.75				clean burn
Indiana U of PA	PA-0122	4 gas/oil IC engines (oil)	8386	12/29/1994	1.90	0.75			clean burn

average #REF!
median #REF!

overall
average 1.33
median 1.33